

B. CORRELATION OF CALCULATION AND EXPERIMENT AND EXAMPLES
OF CALCULATIONAL PROCEDURES

1. PIPING INTERSECTIONS

a. Piping Intersections from Nuclear Safety Guide (1)

One of the most common types of interaction is between the various branches of a piping arrangement. The interaction between piping ells, tees, crosses or wyes, can be conservatively calculated using the following equation and Table I:

$$d_e = \left[(\sum_i^n d_i^2) / n \right]^{1/2} \quad (a)$$

where

d_e = the effective diameter

d_i = diameter of the i-th branch of the intersection

n = number of branches; 2 for ells, 3 for tees and wyes, and 4 for crosses

An intersection is safe if d_e is equal or less than the values in Table I.

An example would be a 6-inch I.D. pipe joined by a 4-inch pipe as a tee:

$$d_e = \left[\frac{(6)^2 + (6)^2 + (4)^2}{3} \right]^{1/2} = 5.416$$

From Table I, page V.B.1-2, this pipe intersection would be unsafe for all materials and systems except the minimal reflected ^{235}U system.